Listing of Claims:

1.-7. (Canceled)

8. (Currently amended) A circuit for detecting biomolecules *in vivo*, the circuit comprising

an optical radiation source configured for *in vivo* use that emits first optical radiation;

an optical radiation detector configured for *in vivo* use that detects second optical radiation emitted by excited labeled binding molecules; and

a processor circuit, coupled to the optical radiation source and the optical radiation detector, ~~wherein the processor circuit is configured to operate in conjunction with the release of labeled binding molecules for excitation by the first optical radiation and that receives an intensity signal associated with the intensity of the second optical radiation~~

wherein the processor circuit is configured to release fluorescently labeled antibodies selected to bind with predetermined Tumor Specific Antigens (TSAs),

the processor circuit is further configured to activate the *in vivo* optical radiation source after a predetermined first time interval after release of the fluorescently labeled antibodies, the predetermined first time interval selected to allow a first portion of the fluorescently labeled antibodies to bind with local available TSAs and a second portion of the fluorescently labeled antibodies to become remote from the circuit so that the first optical radiation excites the first portion of the fluorescently labeled antibodies bound with the local available TSAs and does not excite the second portion of the fluorescently labeled antibodies that become remote,

the processor circuit is further configured to sense a voltage generated by the *in vivo* optical radiation detector after a second predetermined time interval, the second predetermined time interval being after emission of the first optical radiation has ceased.

9. (Previously presented) A circuit according to Claim 8, wherein the optical radiation source comprises a laser.

10. (Original) A circuit according to Claim 8, wherein the optical radiation detector is selected from a group consisting of a phototransistor, a photodiode, and a photomultiplier.

11. (Original) A circuit according to Claim 8, wherein the first optical radiation has a first frequency and the second optical radiation has a second frequency.

12. (Original) A circuit according to Claim 11, wherein the first frequency is greater than the second frequency.

13. (Previously presented) A circuit according to Claim 8 further comprising:
an emission filter coupled to the optical radiation source; and
an absorption filter coupled to the optical radiation detector.

14. (Original) A circuit according to Claim 8, further comprising:
an inductor coupled to the processor, wherein the inductor provides power to the circuit in response to a power signal received from the *ex vivo* system.

15. (Original) A circuit according to Claim 8, wherein the circuit is on a platform having a diameter of about 2mm.

16. (Previously presented) A circuit according to Claim 8, wherein the signal is digitally encoded.

17. (Currently amended) A circuit according to Claim 8, wherein the circuit is on a platform coated with a biocompatible optical translucent layer.

18.-28. (Canceled)

29. (Previously presented) A circuit according to Claim 8 wherein the first and second optical radiation comprises first and second optical radiation at respective first and

second wavelengths selected to promote transmission of the first and second optical radiation through a bio-fouling tissue on the optical radiation source and the optical radiation detector.

30. (Previously presented) A circuit according to Claim 8, wherein the circuit comprises an implantable circuit configured for *in vivo* implantation for at least six months.

31. (Previously presented) A circuit according to Claim 8 wherein the processor circuit is further configured to provide the signal for wireless transmission to the *ex vivo* system.

Claims 32-34 (Canceled).

35. (Previously presented) A circuit according to Claim 8 further comprising:

a piezoelectric circuit responsive to the processor circuit, wherein the piezoelectric circuit is configured to vibrate under control of the processor circuit to release the labeled binding molecules.

36. (Currently amended) A circuit according to Claim 8, wherein the processor circuit is further configured to control release of unlabled binding antibodies ~~molecules~~ separate from the fluorescently labeled antibodies ~~binding molecules~~.

37. (Currently amended) A circuit according to Claim 36 wherein the processor circuit is further configured to release ~~of~~ the unlabled binding antibodies during a first time interval ~~molecules out of phase with~~ and to release the fluorescently labeled antibodies during a second time interval ~~binding molecules~~.

38. (Withdrawn) A circuit for detecting biomolecules *in vivo*, the circuit comprising:

an *in vivo* optical radiation source configured to emit first optical radiation;

a first *in vivo* optical radiation detector configured to detect the first optical radiation to provide an optical radiation source feed back signal;

a second *in vivo* optical radiation detector configured to detect second optical radiation emitted by excited labeled binding molecules; and

a processor circuit, coupled to the *in vivo* optical radiation source and the first and second *in vivo* optical radiation detectors, configured to change a level of the first optical radiation based on the optical radiation source feed back signal.

39. (Withdrawn) A circuit according to Claim 38 further comprising:

a circuit board having the processor circuit and, the first and second optical radiation detectors thereon, wherein the first and second optical radiation detectors are on opposing sides thereof.

40. (Withdrawn) A circuit for detecting biomolecules *in vivo*, the circuit comprising:

an *in vivo* optical radiation source configured to emit first optical radiation;

an *in vivo* optical radiation detector configured to detect second optical radiation emitted by excited labeled binding molecules; and

a processor circuit, coupled to the *in vivo* optical radiation source and the *in vivo* optical radiation detector, configured to operate in conjunction with the release of labeled binding molecules for binding with biomolecules associated with tumors for excitation by the first optical radiation and that receives an intensity signal associated with the intensity of the second optical radiation.

41. (Withdrawn) A circuit for detecting biomolecules *in vivo*, the circuit comprising

an *in vivo* optical radiation source configured to emit first optical radiation;

an apparatus configured to controllably release labeled binding molecules for excitation;

an *in vivo* optical radiation detector configured to detect second optical radiation emitted by excited labeled binding molecules; and

a processor circuit, coupled to the *in vivo* optical radiation source, the *in vivo* optical radiation detector, and the apparatus, the processor circuit configured to control the emission of the first optical radiation and to receive a signal associated with the intensity of the second

optical radiation and configured to temporally control release of labeled binding molecules from the apparatus according to a predetermined time interval.

42. (Withdrawn) A circuit according to Claim 41 wherein the apparatus is in communication with a vibrator configured to vibrate responsive to control of the processor circuit